

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Union Carbide Corp - St Charles Operations
Specialty Products Unit
Taft, St. Charles Parish, Louisiana
Agency Interest Number: 2083
Activity Number: PER20070032
Proposed Permit Number: 1912-V1**

I. APPLICANT

Company:

Union Carbide Corp - St Charles Operations
PO Box 50
Hahnville, Louisiana 70057-0050

Facility:

Union Carbide Corp- Specialty Products Unit
355 Hwy 3142 Gate 28
Taft, St. Charles Parish, Louisiana
Approximately 2 miles west of Hahnville, on the west bank of the Mississippi River,
off LA Highway 3142 at corner of LA Hwy 18. Approximate UTM coordinates are
746.184 km East and 3,319.222 km North, Zone 15.

II. FACILITY AND CURRENT PERMIT STATUS

Union Carbide Corporation, a subsidiary of the Dow Chemical Company, owns and operates a chemical manufacturing facility in St. Charles Parish near Taft. The St. Charles Operations (SCO) facility is an integrated petrochemical manufacturing complex, converting petroleum-based raw materials into a variety of basic building block, intermediate chemicals and plastics. The products from this facility eventually wind-up in thousands of everyday household, business, and consumer products. The facility as a whole started operation before 1969.

Specialty Products Unit (SPU) is composed of four production lines:

- Line 1 produces methoxydihdropyran (MDP) and tetrahydrobenzaldehyde (THBA). The SPU Line 1 (THBA production only) is subject to the Synthetic Organic Chemical Manufacturing Industry Hazardous Organic NESHAP (SOCMI HON) program in 40 CFR Part 63;

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- Line 2 produces lylal, myrac aldehyde, and aldehyde AA. This line is currently out of service;
- Line 3 produces methylmercaptopropionaldehyde (MMP); and
- Line 4 produces MDP.

There are three basic products generated in SPU:

Product 1-Tetrahydrobenzaldehyde (THBA) is produced by the reaction between acrolein and butadiene. After passing the solution through reactors, the reactor effluent, including unreacted raw materials are stripped from the solution and recycled as feed to the system. The product containing stream passes through a refining system where the product is refined and unwanted byproducts are removed. The refined THBA is then pumped to unit storage tanks. The normal vents and safety relief device discharges are normally routed to the unit flare. They can, however, be routed to the incinerator as a backup device.

Product 2 - methylmercaptopropionaldehyde (MMP) is the product of the reaction between methyl mercaptan (MeSH) and acrolein. The feed system to the reactor is designed to minimize emissions. Catalyst is also added to the reactors during the reaction. Product from the reactors is pumped to intermediate hold tanks prior to being pumped to one of two unit storage tanks. From the storage tanks MMP is loaded into tank cars. All MMP tanks and tank cars are vapor balanced to minimize emissions. MeSH is unloaded from tank cars to unit storage tanks in such a way so as to also minimize emissions. Normal vents from the process equipment are routed to the incinerator to destroy sulfur containing compounds. The only exception to this is the normal vents from the unit acrolein storage tanks which can be routed to the flare or incinerator. Vessel pressure relief devices are routed to the unit flare.

Product 3 – Methoxydihydropyran (MDP) is the product of the reaction between acrolein and vinyl methyl ether (VME). After passing the solution through reactors, the unreacted raw materials and diluents are stripped from the solution and recycled as feed to the system. The product containing stream passes through a refining system where the product is refined and unwanted byproducts are removed. The refined MDP is then pumped to unit storage tanks. The normal vents and safety relief device discharges are normally routed to the unit flare. They can, however, be routed to the incinerator as a backup device.

Union Carbide Corp - St Charles Operations is a designated Part 70 source. Several Part 70 permits have been issued to the operating units within the complex. These include:

Permit No.	Unit or Source	Date Issued
2350-V3	LP-3 Unit	12/30/2003*
2858-V0	PXC Unit	(Rescinded 4/8/2008)
2422-V1	Olefins I & II	9/30/2004*
2343-V1	Energy Systems	1/31/2008

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Permit No.	Unit or Source	Date Issued
2421-V0	Amines Plants	11/10/2005
2104-V1	Environmental Protection Dept. (EPD)	2/16/2006
2656-V0	Olefins Distribution/Site Logistics Units	3/13/2006
2214-V0	LP-6	3/27/2006
477-V0	Unit 5 (Amines I)	<i>(Rescinded 7/12/2008)</i>
2876-V1	Unit 9	8/10/2006
476-V1	Oxide I	1/30/2007
513-V2	Acrylics I	6/15/2007
1909-V1	Higher Glycols Plant	6/18/2007
2446-V1	Unit 8 (EXP)	7/3/2007
373-V2	Oxide II	6/13/2008
2254-V0	Acrylics 2	6/19/2006 <i>(Amended 7/20/2007)</i>
2257-V4	TB1 and TB2 Units	10/9/2007
2814-V1	MGE Plant	2/28/2008

* Timely renewal submitted.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire were submitted by Union Carbide Corp on September 12, 2007 requesting a Part 70 operating permit renewal. Additional information dated June 12, July 28, and October 17, 2008, as well as an updated application dated November 20, 2008 was also submitted.

Project

The renewal application is requesting a permit modification for emissions changes associated with an increase in production of MDP from 60 MM lbs/yr to 85 MM lbs/yr. The emissions changes are as follows:

- Throughput increases for MDP storage tanks and MDP flare and thermal oxidizer feeds;
- Material composition updates for storage tanks and loading sources;
- Flare feed updates;
- Thermal oxidizer feed updates;
- Fugitive emission factor and component count updates;

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- Construction of steam stripper for MON MACT and addition of steam stripper feeds to the thermal oxidizer;
- Deletions of emissions associated with Line 2 production;
- Updates to Regulatory Tables and Section 2.0, Regulatory Applicability, to include MON MACT and OLD MACT;
- Incorporation of Notification of Case-by-Case Insignificant Activity emission changes from February 2007; and
- Throughput increase for EIQ No. 880 to account tank-to-tank transfers.
- Include Diesel Generator (EIQ 3004), previously permitted as an insignificant activity, as a permitted source.

Proposed Permit

Permit 1912-V1 will be the renewal/modification of Part 70 operating permit 1912-V0 for the Specialty Products Unit.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
PM ₁₀	1.49	1.55	0.06
SO ₂	8.39	5.35	-3.04
NO _x	16.97	19.80	2.83
CO	87.22	87.45	0.23
VOC *	5.43	5.61	0.18
Hydrogen Sulfide	-	<0.01	<0.01

* Includes 1.17 TPY of Louisiana Toxic Air Pollutants (TAPs)

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Applicability and Exemptions of Selected Subject Items

For the applicability and exemptions of selected subject items at the unit, refer to Section X - Table 1. Applicable Louisiana and Federal Air Quality Requirements, and Section XI

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-Table 2. Explanation for Exemption Status or Non-Applicability of a Source, of the proposed permit.

Prevention of Significant Deterioration/Nonattainment Review

PSD review is not required with this renewal.

Streamlined Equipment Leak Monitoring Program

The facility is not under a streamlined equipment leak monitoring program.

MACT Requirements

The applicable MACT requirements for the different sources are described in the Specific Requirements section of the proposed permit.

Air Quality Analysis

Not required.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

A permit shield was not requested.

VI. PERIODIC MONITORING

Applicable monitoring for all equipment can be found in the Specific Requirements Section of the permit draft.

VII. GLOSSARY

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Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H₂S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

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Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.